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[54] **SYSTEM AND METHOD FOR PROVIDING ACCURATE VEHICLE POSITIONING USING SPATIAL BIAS TECHNIQUES**

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Related U.S. Application Data

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[52] U.S. Cl. 364/449; 364/460; 342/357; 342/457
[58] Field of Search 364/449, 453, 364/424.02, 443, 460; 340/988, 990; 342/450, 451, 352, 356, 357, 358, 457

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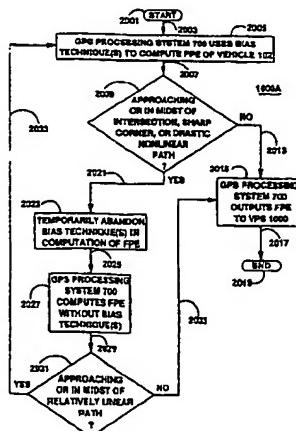
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[57] **ABSTRACT**

A vehicle position determination system and method provide accurate vehicle positioning using a global positioning system. Spatial bias techniques are used to improve positioning accuracy while the vehicle is in the midst of a relatively linear path and is not approaching a drastically nonlinear path. The use of spatial bias techniques is suspended while the vehicle is approaching or in a drastically nonlinear path.

17 Claims, 93 Drawing Sheets

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105

PSEUDOLITE(S)   GPS SATELLITES

104

192   107   110

VEHICLE

VEHICLE POSITIONING SYSTEM (VPS)

MOTION POSITIONING SYSTEM (MPS)

GPS
PROCESSING
SYSTEM

VEHICLE
ODOMETER   902

904

INERTIAL
REFERENCE
UNIT (IRU)

GYROS   106

700

MPS INTER
COMMUNICATIONS
PROCESSOR

108

ACCELEROMETERS

906

900

190

112   114

194

VPS
PROCESSING
SYSTEM   116

1000

118

HOST
PROCESSING
SYSTEM   196

NAVIGATION
SYSTEM

1022

186

102

BASE STATION   188

100

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FIG 1
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